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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
| 10/005,532 | 10/29/2001 | Hayato Kimura | 01645/LH | 9190 |

1933 7590 10/17/2003

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EXAMINER

SONG, HOON K

ART UNIT PAPER NUMBER

2882

DATE MAILED: 10/17/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/005,532

Applicant(s)

KIMURA ET AL.

Examiner

Hoon Song

Art Unit

2882

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 16 July 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-4 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-4 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 29 October 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1-2 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hendler et al. (US 5966212) in view of Willits et al. (US 4809188).

Regarding claim 1, Hendler teaches a photo-sensor device, comprising:

A light-applying fiber (ftc1..ftcn) to apply an inspection light to a subject (190, 490) to be inspected (column 3 line 54+);

A light-receiving fiber (ftc1..ftcn) to receive a reflected (490) light from the subject to be inspected (column 3 line 54+);

a laser beam source (110) to emit the inspection light to the light-applying fiber;

A photo-sensor (160) to receive the reflected light via the light-receiving fiber;
and

A casing (400) enclosing the light-applying fiber, the light-receiving fiber, the laser beam source and the photo-sensor (figure 4a).

however Hendler fails to teach that the light –applying fiber and the light-receiving fiber are bundled to form a fiber bundle, and an objective optical system is provided at a front end of the fiber bundle.

Willits teaches light –applying fiber (26) and light-receiving fiber (36) are bundled to form a fiber bundle, and an objective optical system (20) is provided at a front end of the fiber bundle.

It would have been obvious to an artisan of ordinary skill in the art at the time the invention was made to bundle the light applying fiber and light receiving fiber in order to focus illumination from end of an illumination fiber onto the inspecting subject and receiving reflected light through same objective lens (column 4 line 24+). Thus it would provide an optically fast, low cross-take, coaxial sensing system (column 4 line 20+).

Regarding claim 2, Hendler as modified by Willits teaches that the photo-sensor device comprises fiber arrays (ftc1..ftcn) obtained by disposing plural channels of sensor units in the casing (400), and wherein each of the sensor units as one channel (ftc1) comprises one said light-applying fiber, one said fiber bundle, one said laser beam source (110) connected to the light-applying fiber of the fiber bundle(ftc1), and one said photo-sensor (160) connected to the light-receiving fiber of the fiber bundle.

Claims 3-4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hendler in view of Wang et al. (US 6445447B1) and Willits et al. (US 4809188).

Regarding claim 3, Hendler teaches an inspection apparatus for irradiating an inspection light on a surface of a substrate and inspecting surface conditions of the substrate based on a reflected light, which comprises

a photo-sensor body (400) disposed opposite to the surface of the substrate; and
a transfer means (human hand or well known) for reciprocally transferring the photo-sensor body in a direction perpendicular to a rotating direction of the disk along the surface of the disk (figure 4a);

wherein the photo-sensor body comprises a fiber array constructed by arranging sensor units as multi-channels (ftc1.. ftcn), and

wherein each of the sensor units comprises:

a light-applying fiber (125),
a light-receiving fiber (195) which is bundled with the light-applying fiber to form a fiber bundle,

a laser beam source (110) to emit the inspection light to the light-applying fiber,

a photo-sensor (160) to receive the reflected light via the light-receiving fiber.

However, Hendler fails to teach that the substrate is rotating disk and fail to teach the light –applying fiber and the light-receiving fiber are bundled to form a fiber bundle, and an objective optical system is provided at a front end of the fiber bundle.

Wang teaches rotating disk optical scanning system using fiber laser (figure 1).

Art Unit: 2882

It would have been obvious to an artisan of ordinary skill in the art at the time the invention was made to inspect the Wang's rotating disk in order to detect small defects on the surface of a rotating recording disk (column 1 line 12+). Accordingly, One would be motivated to inspect rotating disk using Hendler's inspection system because it would inspect high speed and covering wide area of the rotating disk.

Willits teaches light –applying fiber (26) and light-receiving fiber (36) are bundled to form a fiber bundle, and an objective optical system (20) is provided at a front end of the fiber bundle.

It would have been obvious to an artisan of ordinary skill in the art at the time the invention was made to bundle the light applying fiber and light receiving fiber in order to focus illumination from end of an illumination fiber onto the inspecting subject and receiving reflected light through same objective lens (column 4 line 24+). Thus it would provide an optically fast, low cross-talk, coaxial sensing system (column 4 line 20+).

Regarding claim 4, Hendler teaches a plurality of the fiber arrays are arranged in plural lines in a state such that phases of adjacent fiber arrays are shifted (column 3 line 40).

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hoon Song whose telephone number is 703-308-2736. The examiner can normally be reached on 8:30 AM - 5 PM, Monday - Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward Glick can be reached on 703-308-4858. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.

Hoon Song HKS

**DAVID V. BRUCE
PRIMARY EXAMINER**